SECTION 811
ELECTRICAL CONDUCTORS HIGHWAY LIGHTING

811.01. DESCRIPTION.

This work shall consist of furnishing materials and installing electrical conductors used in buildings and outdoors for the transmission and distribution of electrical energy shown on the Plans.

811.02. MATERIALS.

The electrical conductors shall meet the requirements specified in the following Subsections of Section 700 - Materials:

Building Wire and Cable	738.02(b)
Underground Secondary Distribution Wire and Cable	738.02(c)
Outdoor Aerial Neutral-Supported Secondary Distribution Wire and Cable	738.02(d)

811.04. CONSTRUCTION METHODS.

(a) **General.** Take care to prevent damage to the conductor or insulation during installation. Replace any conductor damaged during the installation at no additional cost.

(b) **Conductors in Conduit.** Complete the conduit system before installing the conductors. Provide slack in each conductor as follows: At least 2 feet (0.60 m) at all pole bases and at least 3 feet (0.9 m) at each pull box.

(c) **Aerial Conductors.** Install aerial conductors in accordance with the National Electric Safety Code and the conductor manufacturer's recommended sag and tension charts. Require of the cable manufacturer a copy of these charts for each size and type of cable supplied, prior to installation and acceptance of the cable by the Engineer.

(d) **Splices and Taps.** Splice or tap the underground and indoor conductors only at pull boxes, pole bases, control cabinets, junction boxes, or other appropriate weatherproof enclosures. Splice and tap outdoor aerial conductors as shown on the Plans. Do not pull splices into the conduit system. Provide the types of splices and taps shown on the Plans or provided for herein.

In insulated conductors, make splices or taps waterproof. There are two acceptable procedures for achieving this:

1. Make splices and taps using compression type of split bolt connectors, giving them a minimum of three layers of rubber tape applied in uniform half-lap wrapping, or covering the joint with at least a 1/8 inch (3 mm) layer of electrical insulating putty. The next covering shall be not less than three layers of high dielectric, high tensile strength cold weather type plastic tape in uniform half-lap wrapping over the rubber tape or putty, and then coated with insulating paint, or
2. use waterproof self-insulating connections made up of compression type connectors and epoxy type cast splice kits or heat shrinking type splice kits.

An alternative is to make waterproof self-insulating connections made up of compression type connectors and epoxy-type cast splice kits or heat shrinking type splice kits.

(e) **Fuse Holders and Fuses.** Make fuse holders either in-line or Y-type connectors as shown on the Plans; make sure they are waterproof and self-insulating, and have a quick disconnect breakaway feature on the load side, if specified. Install a Y-type fuse holder at the base of each pole or overhead sign structure complete with the properly sized fuse. If specified on the Plans, branch circuits shall have an in-line fuse holder and fuse.

(f) **Testing.** Test the installed electrical conductors in accordance with Section 805.

811.05. METHOD OF MEASUREMENT.

The electrical conductors will be measured by the linear foot (meter) for each of the various sizes and types specified, installed and shall include all connectors, fuses, splices, taps, and incidentals necessary to complete the electrical system as provided on the Plans.

811.06. BASIS OF PAYMENT.

The accepted *electrical conductors,* measured as provided above, will be paid for at the contract unit price as follows:

ELECTRICAL CONDUCTOR ..... LINEAR FOOT (METER)

Such payment shall be full compensation for furnishing all materials, equipment, labor, and incidentals required to complete the work as specified.

SECTION 812
HIGH MAST POLES

812.01. DESCRIPTION.

This work shall consist of furnishing materials and installing of high mast poles in accordance with these specifications and details shown on the Plans or established by the Engineer.

812.02. MATERIALS.

Before the notice to proceed is issued, and before starting work, submit 8 copies, in brochure form, of a schedule of materials and equipment items proposed for the project. Include brand names, catalogue numbers, descriptions, cuts, shop and design drawings, and calculations as may serve to establish compliance with these specifications. (Materials normally used in highway construction and covered by the Standard Specifications, as to requirements, sampling and acceptance, need not be included in the schedules.)

NOTE: It is the Contractor's responsibility to hold the manufacturer responsible for the correctness of dimensions and details on the design drawings. Approval of such drawings will not relieve the manufacturer of this responsibility.

(a) **Structural Design.**

1. The design of the high mast poles covered by these specifications shall be the responsibility of the manufacturer. High mast poles shall be designed for a minimum of 80 mph (130 km/hr) wind velocity in accordance with the current edition of AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals." The wind loads,